

MCB 142 Discussion

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September 30, 2008

1 Announcements

The quiz answer key, as well as the answer key to the extra practice problems, will be made available on the website by tomorrow.

The first midterm will be held next Monday, October 6, 6-8 PM, in 155 Dwinelle. All GSIs and Prof. Amacher will be holding extra office hours on Friday and Monday. In addition to my office hour on Friday, 4-5 PM, I will hold extra office hours on Monday, 10 AM-noon.

2 Problem Solving Tips

2.1 Mendelian Inheritance

- How many genes are involved? One, two, more?
- Which variant of the trait in question is dominant? Which is recessive?
- Which generation is the question asking about? P, F1, F2, progeny of F2?
- Is it a dihybrid cross or a testcross? What ratios would you expect from both?
- Complications to expect: lethality, epistasis, co-dominance/incomplete dominance, complementary gene action, etc.

2.2 Linkage and Tetrad Analysis

- Is the question asking for recombination frequency or map distance? (In the latter case, if the problem asks about tetrads, use the revised formula that was derived in lecture.)
- How many genes are involved? How many phenotypic classes do you expect from a testcross? Are you given that number of phenotypic classes?
- Complications to expect: unlinked genes, two genes linked too closely for recombination, no double crossovers

- In a tetrad analysis problem, which classes reflect parental ditypes, non-parental ditypes and tetratypes? What are the recombination events that could cause each?
- Does the question specify ordered tetrads? Does the question involve gene-centromere distances?

2.3 Chromosomal Rearrangements and Ploidy

- What are the characteristics of each chromosomal rearrangement: deletion, duplication, inversion, reciprocal translocation?
- What anomalies occur during the pairing of homologous chromosomes during meiosis if there is a chromosomal rearrangement?
- In questions concerning aneuploidy, what meiotic products result if nondisjunction occurs in meiosis I or meiosis II?